Work-related stress and depressive disorders

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Abstract

The 1980s and 1990s has seen a considerable change in the workforce structure in industrialised economies. Employees are commonly faced with greater demands and less job security, both of which are likely to be stressful, thus psychological disorders especially depression may increasingly be caused by work-related stressors. An issue of this journal in 1997 (Vol. 43, No. 1) was indeed devoted to stress in the workplace and since then, these workplace changes have progressed and a review seems timely. Because interpreting results of cross-sectional studies is limited by a potential reciprocal relation between work stressors and depression (since "effort after meaning" can influence how "distressed" individuals report stressors at work), this review largely focuses on prospective or predictive studies to minimise this bias. Not surprisingly, the findings from occupational stress research is consistent with the more general life event stress literature showing that specific acute work-related stressful experiences contribute to 'depression' and, more importantly perhaps, that enduring 'structural' occupational factors, which may differ according to occupation, can also contribute to psychological disorders. There are significant implications for employees, their families, employers and indeed the wider community. © 2001 Elsevier Science Inc. All rights reserved.

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Introduction

Work and family are the two domains from which most adults derive satisfaction in life; equally they are the common sources of stressful experiences. The working environment continues to change with globalisation of the world economy and economic rationalisation driving job restructuring, greater part-time and contract work, and greater workload demands that commonly occur in a context of higher job insecurity. There is thus not an unreasonable perception in the community that work is increasingly the source of much of our stress and distress.

The implications of work-related stress include the effects on worker satisfaction and productivity, their mental and physical health, absenteeism and its economic cost, the wider impact on family function and finally, the potential for employer liability. While depression is the most likely adverse psychological outcome, the range of other possible "psychological" problems include "burnout," alcohol abuse, unexplained physical symptoms, "absenteeism," chronic fatigue and accidents, sick building syndrome and repetitive strain injury [1]. This review focuses largely on prospective or "predictive" studies both of "depression" and "burnout," and it is based on literature searches using Medline, Psych INFO and EMBASE from 1966 to 2000 (keywords: occupational stress, work, occupations, workload, occupational health, depression, anxiety). The review assesses the stressor findings by different occupational groups because they may embrace different qualities of stress which furthermore may be a major factor contributing to psychological morbidity in these groups.

Morbidity in different occupational groups

In the studies reviewed it is usual for *depression* to be diagnosed by a range of questionnaires including the

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Beck Depression Inventory, Zung scale, the General Health Questionnaire (GHQ), the Centre for Epidemiological Studies Depression Scale (CESD) or similar clinically validated questionnaires. *Burnout* is also a construct often used and embraces three clusters of symptoms; "emotional exhaustion," "depersonalisation" (negative, insensitive attributes to clients) and a sense of reduced "personal accomplishment" [2]. While burnout by definition is only assessed in an occupational setting, it may nonetheless be a precursor or correlate of depression [3–5]).

Three broad but distinct occupational groups are readily identifiable in the literature. They are *blue-collar/manual workers*, *white-collar/civil servants* and the *"helping" professions* (teachers and healthcare workers). The Karasek "demand–control" model of work-related stress [6] is commonly employed, especially in the first two groups. In this model, the composite construct of "job strain" is defined as a combination of the constructs of (high) *job demands* and (low) *decision making latitude* (or control over workload), both of which are "objectively" derived from descriptions of the nature of work. All three of the above constructs have been assessed in various studies.

Blue-collar workers

In factory and blue-collar workers studied over 3 years, in Japan (*N*=468) [7,8], "lack of control over work," "unsuitable jobs" and "poor work place relations" predicted depression (Zung scale) [7]. Furthermore, the latter two work variables also predicted depressive disorder diagnosed clinically by a psychiatrist in a nested cohort of this sample; these relationships were significant even after controlling covariates and initial depressive symptoms [8]. In a combined study of 900 blue- and white-collar industrial workers studied over 5 and 10 years [9], stressors at work predicted mental stress symptoms, poor perceived health and absenteeism; mental stress symptoms in turn predicted smoking, drinking, and absenteeism.

In the blue-collar environment, *noise* can be a particular work stressor. In 2368 blue-collar workers [10], noise exposure in women predicted irritability, somatic complaints, anxiety and depression; in men noise predicted only "post work irritability." These relationships however were found only in "vulnerable" subjects being those reporting "noise annoyance" (the emotional reaction to noise at exposure). In both sexes noise however contributed to increased work accidents and sickness absence [10]. Similarly, in another setting [11], while traffic noise had no direct effect on psychological morbidity, it was related to "noise annoyance" which was associated with "noise sensitivity" (the physiological reaction to noise). The complex relationships of "noise sensitivity," "noise annoyance," "negative affectivity" and depression were

explored in two other longitudinal studies [12]. Noise sensitivity was found to be moderately stable over time, and predicted depression, but in part this relationship was reciprocal.

White-collar workers

In white-collar workers, there have been several large prospective studies. In a 4-year Finnish study (*N*=15530) [13], records linkage was used to access psychiatric morbidity data (suicides, hospitalisation, prescription of psychotropic drugs). Interpersonal conflict at work predicted "physician-diagnosed" psychiatric morbidity (relative risk=2.18) even after controlling social class, prior health and prior "mental instability/stress" (i.e., neuroticism, hostility, life stress, low self-assurance) [13]. In a 5-year prospective study of 5000 employees drawn from a Danish population register [14], changes in repetitive work, job insecurity, high demands and low support all predicted a single "self-rated" health item.

In the impressive Whitehall II study, (6895 male and 3413 female civil servants) [15–21] psychological morbidity (GHQ score) was predicted both by poor work social supports, and by high job demands [15]. Poor social support and poor "skill discretion" also predicted "psychiatric absenteeism" [15]. These results confirmed earlier cross-sectional findings [16]. Both negative work relationships and the imbalance between work effort required and occupational reward also predicted poor physical, psychological and social functioning (SF36), even after controlling confounding variables. [17]. Furthermore, much of the social class difference that had been found in both "depression" (GHQ) and "well being" (affect balance scale) was explained by the psychosocial (Karasek) work environment [18]. Finally, in a quasi-experimental component of the study, "job insecurity" (the likelihood of redundancy), predicted physical symptoms, body mass index, excessive sleep [19] and, psychological morbidity [20]. Job insecurity did not however predict any change in actual health behaviours [21].

In managerial employees (*N*=442) [22], two of the four work-related stressors that were assessed (work load and role ambiguity) predicted depressive symptoms. This association furthermore was potentiated by "negative affectivity," but only in females [22]. In a "community cohort" of 1415 twenty-six-year-old men in mixed occupations [23], "nervous strain" (a self-report single item) was predicted by occupational status but not by social class of origin. After accounting for occupational status, and neuroticism, five work tasks made a significant contribution to nervous strain. These were supervision, teaching, driving, skilled machine operation and people contact. Finally, in a community-based study of 795 employed adults [24], work pressure, lack of autonomy and role ambiguity predicted subsequent depression (CESD) but job involvement did not.

"Caring" professions

Teachers

In *"new" or trainee teachers* [25], work demands and poor support predicted depression, (GHQ) over 2 months in one study, while in another [26,27], three self-reported work stress indices predicted postemployment depression (CESD scale) and job dissatisfaction, even when initial depression and personality were controlled. In more *experienced teachers* [28–30], burnout was predicted by both "work setting" and specific "work stress." The effect of these variables was however not direct, but operated by influencing both the work setting and work stress at the subsequent assessment [29]. Specific work variables predicting burnout were poor social support outside the organisation, personal characteristics [29] and, "red tape" and "disruptive students" [30]. Similarly, teaching "stressful students" early in the school year predicted poor mental health in the latter part of the year in another sample [31].

A more detailed study of the relation of 12 work stress variables to the three "burnout" subscales (in another teacher sample) [32], found "role conflict" alone predicted "emotional exhaustion," only two "support variables" predicted "poor accomplishment" while there were no predictors of "depersonalisation." Finally, in school psychologists [33] all three burnout subscales were predicted by personality (neuroticism), but only "emotional exhaustion" and poor "accomplishment" were predicted by self-reported "work stressors." The relation between work stressors and burnout was furthermore found to be reciprocal, and when initial burnout was controlled, work stressors did not predict subsequent burnout [33].

Doctors

The nature of the speciality and the duration of professional experience influences risk of morbidity in doctors. For instance, in junior doctors [34] low autonomy predicted psychological morbidity while work demands were most predictive in older doctors. In relation to medical specialities for instance, work-related stress and specifically, "low task–role clarity" predicted later depression in emergency medicine residents [35], while in GPs [36], routine work administration, job demands, interference with family and interruptions with work, predicted their negative mental well-being. In anaesthetists [37], communication in the hospital and perceived of control over work were significant in determining job satisfaction and mental well-being. In middle-aged medical graduates generally [38], the effects of psychological job demands, patient demands, physician resources and work control were studied; high job demands were associated with both "work dissatisfaction" and psychological disorder (GHQ) in univariate analyses. In regression analyses, lack of control over work was independently associated with both dissatisfaction and psychological disorder [38].

Nurses and other health workers

Healthcare workers generally have psychological morbidity rates higher than the general population; in a large NHS sample in the UK the relative risk of disorder was 1.5 and was most marked in direct care staff and women in particular [39].

In nurses [40], "burnout-related absenteeism," was predicted by "ambiguity about authority" and perceived lack of social support at work; this study was however limited by a low 43% response rate. In another sample of nurses [41] psychological well-being was predicted by the congruence of work status (full- or part-time) with the desire for that degree of employment.

In youth workers [42], perceptions of job insecurity, of a "controlling work setting" and low social support, predicted burnout; eight other indices of work stress were however not significant predictors. In long-term care staff [43], work load and relationship stress, both predicted depression and physical symptoms over 8 months. Background variables and "variables assessed at time one," predicted much of the variance both in depression (42%) and in physical symptoms (38%), while problems with supervisor relationships predicted only 13% of the variance in depression and physical symptoms, respectively. Paradoxically, patient care stressors were predictors of better psychological and physical health status. The structure of the work environment (cohesion, autonomy, clarity) however was not predictive [43].

In social workers [44], change in burnout over time was independently predicted by job stress, poor supervisor support, low satisfaction with clients and poor self-esteem; together however they accounted for only 28% of the variance [44]. In child protection workers [45], work environment and work hassles predicted all three subscales of burnout over 18 months, the relationship remaining significant with initial burnout controlled. Finally, in a well-designed albeit, cross-sectional study of mental healthcare workers [46] involving a principal components analysis of work stress, some 28% of variance in "depression" (GHQ score) and 42% in burnout were explained by work stress factors; in particular, poor staffing resources, work overload and carer dissatisfaction were related to depression.

Thus while different occupational groups may differ in the nature of their work environments, the "social environment" (usually conflict in relationships or poor social support), seems to predict depressed mood or burnout in most occupational groups. Also reasonably consistent as a predictor are "client-related" stressors in the caring professions. The structure of individual work environments seems more difficult to measure and less consistently predicts depression, although lack of control over work is a relatively consistent predictor. Overall, the proportion of variance in depression/burnout explained by stress factors in different studies varies considerably from approximately 10% to 50%, due in all probability to the

differences in groups studied, the measures used and the varying time frames of assessments.

"Moderating variables"

Covariates are often presumed to influence the "work stress and depression" relationship; these include specific acute stressful events, "hours worked," job involvement, job controllability, personality variables and social supports. Whether these variables are independent predictors of depression or moderate the relation of work stress to depression is not always clear.

Specific stressful events in the workplace

Occupations of different types may be associated with specific types of stressful life events that contribute to psychological disorder. These include negative work relationships or interpersonal conflicts [13,17,43], general abuse and sexual harassment [47]), bullying (especially by supervisors) ([48] and other adverse events including trauma exposure in nurses [49]), air traffic incidents in pilots [50] or stressful and disruptive students for teachers [30,31]. These findings are consistent with the general life events literature. [51]

Hours worked

The effect of hours worked has been reviewed by Spurgeon et al. [52] who carefully distinguished this variable both from shift work and work overload; 10 of 11 studies revealed an adverse effect of long hours of work on mental health. This relationship, in turn, was further moderated by other variables including employee choice [53], personality [54], female sex [55] and occupational class [56]. Long hours, however, may be employer or employee determined. In relation to employee factors and the impact on psychological health, that of the three components of "workaholism" studied [57] (job involvement, "personal driveness" and lack of enjoyment), only the latter two variables correlated with poor health indices in MBA graduates.

Job involvement

In a study of 795 employed adults in a community sample [24], there was only limited support for job involvement having any stress moderating influence on the relationships between role ambiguity and both physical health and alcohol use. There was no evidence for a moderating effect on depression (CESD) [24]. In two earlier studies, one in nurses [40] found some moderating effect while another in supermarket managers [58] did not. Finally in the above study of "workaholism" [57], "job

involvement" did not correlate with measures of psychological distress/well-being.

Job controllability

In a review of the evidence, Glass and McKnight [2] concluded the "uncontrollability" contributed to negative psychological states largely when there was a "discrepancy between career aspirations and occupational achievement" (i.e., there was career dissatisfaction). This conclusion may, however, be somewhat limited being based largely on findings from cross-sectional studies.

Personality

Personality factors studied in particular include "negative affectivity" or neuroticism. Some studies show that personality has an *independent effect* on depression and does not simply moderate the relationship of stressors with psychological morbidity. For instance, in a large community sample [23] both neuroticism and specific work stressors separately contributed to a "nervous strain variable"; there was no evidence of an interaction between these variables nor was there evidence that stressful jobs were held particularly by anxiety-prone subjects [23]. In helping professionals [42], the attributional style of "accepting personal responsibility for client outcomes" was also an independent predictor of burnout. Finally, in school psychologists [33] personality variables (including neuroticism) remained significant predictors of burnout (accounting for up to 18% of the variance in some instances) even after controlling for demographic variables and self-reported work stressors.

A *"moderating" effect* for personality has however been reported in two studies. "Negative affectivity" was found to potentiate the association between work stressors and depression in female (but not male) managerial employees [22] and in teachers [25]. Finally, negative affectivity/neuroticism may also *confound* the relation between stressors and depression because this "variable" is firstly an independent risk factor for emotional symptoms (across most situations and even in the absence of stressors) [59] and secondly because it may contribute to various occupational stress factors including self-reports of stressors [60,61], interpersonal conflicts [62] and work dissatisfaction [63]. Prospective studies best address this latter problem.

Social supports

Social support is another covariate that may be either a potential moderator or independent risk variable. Poor social support was an *independent predictor* of distress (GHQ) in medical graduates [33], of absenteeism in nurses [40], of psychological symptoms in a community sample of working women [64], and of psychological morbidity (burnout and GHQ score) in Japanese local government officials [65]. In the Whitehall II study [66], social supports at work (even

after adjusting for initial GHQ score) predicted both psychological morbidity (GHQ) and more brief periods of psychiatric absenteeism: this association was further potentiated by poor supports outside work [66]. Poor relationships outside of work and significant marital problems also predicted long periods of psychiatric absenteeism in this sample [67]. Findings overall did not support the stress buffering effect of social supports [66], indeed, paradoxically, good social supports outside of work actually predicted absenteeism (due to both physical and psychiatric problems) [68].

A *buffering effect* has however also been reported. A small prospective study [69]) found a general buffering effect on psychological symptoms while two other studies report more restricted impact. For instance, in one study [70] a causal effect was reported in some workers, being only those who had specific and multiple work stressors, while in a community sample [71]) only the support of a supervisor reduced the risk of depression over 1 year while support from a colleague did not. As in the literature generally, there remains conflict concerning social support as an independent risk factor for morbidity or as simply a moderator of the relation between stressors and psychological morbidity; the evidence more strongly supports the former.

Combined stressors

The effect of stressors of different 'origins' (those at work and those outside it) has also been assessed. Both work stress and domestic stress predicted depression both in married professionals (DSM IIIR) even after controlling potential confounders [72] and in female hospital workers [73]. In working women [74], while work overload predicted psychological disorder (GHQ), surprisingly perhaps their family role stressors did not: high occupational status furthermore diminished the impact of work overload on psychological disorder [74].

This *"spill over" effect* of work stressors on mood at home was found to be greater than the "spill over" effect of stressors at home on mood at work [73]. This is consistent with the findings that when there are stressors both at work and at home, subjects believe their problems at home are in fact due to those at work [23]. Similarly, when assessed using a life events interview [75]), both work and nonwork stressors contributed to depression in medical personnel. Even when vulnerability factors and nonwork stressors were controlled, work stress still contributed to depression.

The *pathways* linking work stressors and depression may not be direct since in a study of blue-collar workers [76] neither initial life events nor "work strain" (economic difficulties, work overload) directly predicted later depression: they did, however, predict subsequent life events and work strain, both of which correlated with depression at that time. This study also revealed a reciprocal relationship; initial depression also predicted subsequent life events and work strain [76].

Findings from intervention studies

Intervention studies can provide the most robust evidence of a causal relationship but they are few in this area. Briner [77] and Cooper and Cartwright [78] have reviewed stress interventions in the workplace and emphasise the need to distinguish *primary interventions* (organisation/structural change), *secondary interventions* (stress management/coping strategies) and *tertiary interventions* (interventions targeted for those actually stressed).

Secondary and tertiary interventions appear to have short-term effects only (in the order of 3 months), and indeed these interventions may be treating morbidity due to nonoccupational stressors [77,79]. Improvement may be seen in a range of psychological outcomes including psychological symptoms, self-esteem and perceptions of work stress [80].

Primary intervention studies report inconsistent findings. While job satisfaction may improve with 'intervention' [81–85], mental health may not [81,82,86], and absenteeism or staff turnover can indeed increase [81,82]. One recent study [87], however, found primary intervention was effective in reducing both depression and sick leave, despite a concurrent increase in amount of overtime worked. Another [79], comparing a primary intervention with (tertiary) individual stress management, found the former had no impact on mental health status (GHQ) and paradoxically was associated with increased physical symptoms, while the latter had only short-term positive effects consistent with other tertiary intervention studies [88]. There is thus very limited evidence that primary (organisational) intervention has significant mental health benefit while tertiary interventions may have positive but short-lived effects and may well be impacting on morbidity due to other nonoccupational causes.

Discussion

There are methodological limitations to many of these studies. Firstly, measures of psychological morbidity most commonly employed are self-report measures; rarely do the studies assess "psychiatric caseness" as diagnosed by a clinician, for obvious logistical reasons given the large sample sizes. Furthermore, other studies use "burnout" as an outcome measure which is not well validated as a construct, even though it does have some significant relationship to psychological health status, particularly depression [2,89]. Nonetheless, it may be a more relevant measure in assessing psychological distress in the workplace.

Secondly, work stressor variables are also often based on self-report. While this may seem to be a more "sensitive" method, it introduces potential bias due to "common method" of assessment, which can occur when a common perceptual set influences the reporting of both the "causal" and 'outcome' variables. For instance *subjective* appraisals

of work stress correlated more strongly with self-reported depression than did *objective work conditions* [16,90]; it is indeed argued that the relation between work stress and depression or burnout may be simply attributable to underlying career frustration [2]. While "self-report" methodology has limitations, they can be largely overcome with prospective study design and appropriate control of "time one" and other confounding covariates such as evidenced in the Whitehall II study [15–21,66–68].

Thirdly, some studies have shown that there may also be a "reverse causal" or reciprocal relationship; both burnout [33] and depression [46,76,91] can also effect the perception or experience of work stressors. Similarly, one study [92] has demonstrated a reciprocal relation between "job resources" (autonomy, variety, skill utilisation) and mental health. It is argued that multipanel prospective studies with "objective" work stressor indices, preferably using structural equation approaches, can best address this issue [93].

Fourthly, "third variables" (such as personality) are also crucial; their effects may be complex and are often poorly assessed. Personality firstly seems to be an independent risk factor for both depression and burnout, irrespective of exposure to work stressors [94]. Secondly, personality (if not appropriately controlled) may also confound the observed association between work stressors and depression since it can influence the perception or occurrence of stressors at work, and depression risk [90]. Finally, personality could moderate the stressor–depression relationship; however, the evidence is weak. When however these 'third' variables have been appropriately controlled in prospective studies, occupational stressors remain as independent predictors of depression.

Finally, in relation to broader issues of method, Mansella [95] argues for the application of a wide variety of methods, measures and sources of subjects in assessing the adverse effects of occupational stress while Kristensen [96] proposes that because stressors clearly differ from one occupation to another, that research therefore should be occupationally specific.

Conclusions

Occupational stress is of increasing importance due to continuing structural changes in the workplace, with both increasing demands and job insecurity imposed on employees. A range of adverse health outcomes have been identified but psychological disorders are significant because they occur frequently, are often unrecognised and can be accompanied by significant social morbidity; there are important implications for the lifestyle and health of employees and their families and there are medico-legal issues.

The major medico-legal issue is that of "liability"; there are two important considerations in this regard. The first is to determine what degree of work stress (responsibilities, hours worked, etc.) may be likely to cause psychological impairment in an average employee, but as yet no reliable quantification is available. In individual cases judgement still rests with experienced clinicians using their clinical findings, with research findings as an evidence-based guide. The problem of assessing what may be acceptable or unacceptable stress is further confused by virtue of the fact that increasing responsibilities and hours worked are becoming more common in the workplace and thus seem more "normative."

The second consideration is, who takes responsibility for the stress exposure. Is it driven by the employer or employee? Employers rarely suggest their employees are working too hard and that they should "ease up", indeed they generally expect increasing productivity from their work force because they are driven by shareholder profit expectations and because they believe perhaps their employees are sufficiently well-renumerated for their efforts. At the same time, the average employee accepts the situation because, although not explicitly stated, their continued employment may depend on meeting these high demands. Other employees, however, those who are workaholic and/or very ambitious, may themselves be more responsible for their exposure to work stress. While the relationship between the employer, employee and the determination of work stress may be complex, it seems clear that psychological morbidity in the workplace will continue as a significant problem unless major changes occur in the structure of employment.

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